

# INDIANA TRAFFIC SAFETY FACTS

May 2010

A collision produces three levels of data: collision, unit (vehicles), and individual. For this reason, readers should pay particular attention to the wording of statements about the data to avoid misinterpretations.

Designing and implementing effective traffic safety policies requires data-driven analysis of traffic collisions. To help in the policy-making process, the Indiana University Center for Criminal Justice Research is collaborating with the Indiana Criminal Justice Institute to analyze 2009 vehicle crash data from the Automated Reporting Information Exchange System (ARIES), maintained by the Indiana State Police. This marks the fourth year of this partnership. Research findings will be summarized in a series of fact sheets on various aspects of traffic collisions, including alcohol-related crashes, light and large trucks, dangerous driving, children, motorcycles, occupant protection, and young drivers. An additional publication will provide information on county and municipality data and the final publication will be the annual Indiana Crash Fact Book. These publications serve as the analytical foundation of traffic safety program planning and design in Indiana.

Indiana collision data are obtained from Indiana Crash Reports, as completed by law enforcement officers. As of December 31, 2009, approximately 99 percent of all collisions are entered electronically through the ARIES. Trends in collisions incidence as reported in these publications could incorporate the effects of changes to data elements on the Crash Report, agency-specific enforcement policy changes, re-engineered roadways, driver safety education programs and other unspecified effects. If you have questions regarding trends or unexpected results, please contact the Indiana Criminal Justice Institute, Traffic Safety Division for more information.



## DANGEROUS DRIVING 2009

In 2009, dangerous driving actions were a contributing factor in 13 percent of all traffic collisions and 25 percent of fatal collisions in Indiana. Nationally, speeding is a factor in approximately one-third of all fatal collisions.<sup>1</sup> In 2008, collisions involving vehicles disregarding signals (running a red light) resulted in 762 fatalities and nearly 137,000 injuries in the United States.<sup>2</sup> Beyond immediate injury outcomes, the National Highway Traffic Safety Administration estimates that speed-related collisions impose societal costs of over \$40 billion annually in the United States.<sup>3</sup>

This fact sheet provides summary data on Indiana traffic collisions involving dangerous driving, which includes *aggressive driving*, *disregarding traffic signals*, and *speeding*. Included are general trends in collision outcomes, the incidence of dangerous driving by vehicle type and driver age, alcohol involvement, safety equipment use rates, county level statistics, and economic cost estimates. Data are supplied by the Indiana State Police Automated Reporting Information Exchange System (ARIES).

### DEFINITIONS

Categorizations of dangerous driving involvement depend on data elements collected by the investigating officer and are influenced by Indiana statute. Since each category has its own statutory code and presents unique challenges for law enforcement, this fact sheet will consider them individually. The following definitions have been established for the purpose of data analysis.

*Aggressive driving* applies when the investigating officer determines that a driver was engaged in at least two of the following: *Unsafe speed*; *failing to yield right of way*; *disregarding a traffic signal/sign*; *improper passing/turning/lane usage*; or *following too closely*. Indiana Code IC 9-21-8-55 requires three or more of these and similar actions to be considered an aggressive driving violation. An upgrade to the Indiana crash repository (ARIES) now allows the officer to enter more contributing factors for a driver; however data will not accurately reflect crash patterns in relation to the law until next year.

*Disregarding a traffic signal* applies when a vehicle driver was involved in a collision at an intersection of two or more roads and disregarded a traffic signal/sign.

*Speeding* applies when a vehicle driver was driving at an unsafe speed, as indicated by *unsafe speed* or *speed too fast for weather conditions* as a contributing factor to the collision. Indiana Code 9-21-5-1 delineates this action from the legal perspective.

*Dangerous driving* applies when a driver takes any of the above actions in a collision.

Note that these categories are not mutually exclusive; in other words, a collision that qualifies as involving *aggressive driving* could also, by definition, involve *speeding* and *disregarding a signal*.

## GENERAL TRENDS

As shown in Table 1, 21.6 percent (136 of 631) of all fatal collisions involved speeding in 2009, a proportional decrease of 4.5

percent from 2008 (188 of 722, or 26 percent). The incidence of aggressive driving in fatal collisions remained constant (3.2 percent of all fatal collisions) from 2008 to 2009, as did the incidence of disregarding a signal. Table 2 shows that among individuals injured in traffic collisions in 2009, the likelihood of a fatality was highest for speed-related collisions (158 fatalities of 6,105 individuals injured, or 2.6 percent). Some of these individuals may also have been driving aggressively; that is, committing other dangerous driving actions in addition to speeding. The rate of speed-related fatalities was roughly twice the rate of non-speed-related fatalities (534 fatalities of 41,177 individuals injured, or 1.3 percent, calculated from Table 2). Of the 9,123 individuals injured in collisions involving dangerous driving, 67 percent (6,105) involved speeding.

The likelihood of dangerous driving in traffic crashes varies by vehicle type (Table 3). Generally, drivers of all vehicle types were equally likely to have been driving aggressively in 2009. Drivers of passenger cars and light trucks were about two times more likely to have disregarded a signal than drivers of large trucks or motorcycles. Speeding was most common among motorcyclists (8.9 percent of all motorcycles involved in crashes) in 2009. From 2008 to 2009 the incidence of dangerous driving remained relatively constant across vehicle types.

**Table 1: Indiana traffic collisions, by dangerous driving involvement and collision severity, 2005-2009**

Dangerous driving category/ Collision severity	Count of collisions					As % all, by severity		
	2005	2006	2007	2008	2009	2008	2009	Change
<b>Aggressive</b>	<b>3,582</b>	<b>3,240</b>	<b>3,045</b>	<b>3,007</b>	<b>2,890</b>	<b>1.5%</b>	<b>1.5%</b>	<b>&lt; 0.1</b>
Fatal	23	11	21	23	20	3.2%	3.2%	< 0.1
Non-fatal injury	967	947	832	801	774	2.3%	2.3%	< 0.1
Property damage	2,592	2,282	2,192	2,183	2,096	1.3%	1.3%	< 0.1
<b>Disregard signal</b>	<b>4,517</b>	<b>2,855</b>	<b>4,797</b>	<b>4,343</b>	<b>3,983</b>	<b>2.1%</b>	<b>2.1%</b>	<b>&lt; 0.1</b>
Fatal	12	15	23	16	14	2.2%	2.2%	< 0.1
Non-fatal injury	1,859	1,149	1,772	1,590	1,506	4.5%	4.5%	< 0.1
Property damage	2,646	1,691	3,002	2,737	2,463	1.6%	1.6%	< 0.1
<b>Speed</b>	<b>20,010</b>	<b>14,570</b>	<b>18,492</b>	<b>22,820</b>	<b>18,252</b>	<b>11.1%</b>	<b>9.6%</b>	<b>-1.5</b>
Fatal	203	159	165	188	136	26.0%	21.6%	-4.5
Non-fatal injury	5,107	4,317	4,377	4,711	4,117	13.3%	12.3%	-1.0
Property damage	14,700	10,094	13,950	17,921	13,999	10.6%	9.0%	-1.6
<b>Any/All</b>	<b>26,482</b>	<b>19,358</b>	<b>25,011</b>	<b>28,915</b>	<b>24,028</b>	<b>14.1%</b>	<b>12.7%</b>	<b>-1.4</b>
Fatal	227	181	196	211	160	29.2%	25.4%	-3.9
Non-fatal injury	7,398	5,956	6,515	6,661	6,006	18.8%	18.0%	-0.9
Property damage	18,857	13,221	18,300	22,043	17,862	13.0%	11.5%	-1.5
<b>All collisions</b>	<b>208,359</b>	<b>192,721</b>	<b>204,999</b>	<b>205,452</b>	<b>189,676</b>	<b>100%</b>	<b>100%</b>	<b>--</b>
Fatal	855	817	804	722	631	100%	100%	--
Non-fatal injury	41,761	38,849	37,416	35,358	33,411	100%	100%	--
Property damage	165,743	153,055	166,779	169,372	155,634	100%	100%	--

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

### Notes:

Dangerous driving categories are not mutually exclusive; Any/All may not equal total of individual categories.

Non-fatal injury applies when no fatalities and at least one incapacitating, non-incapacitating, or possible injury occurred.

**Table 2: Injuries in Indiana traffic collisions, by dangerous driving involvement and injury status, 2005-2009**

Dangerous driving category/ Injury severity	Count of individuals					As % all, by injury status		
	2005	2006	2007	2008	2009	2008	2009	Change
<b>Aggressive</b>	<b>1,603</b>	<b>1,547</b>	<b>1,385</b>	<b>1,256</b>	<b>1,222</b>	<b>2.5%</b>	<b>2.6%</b>	<b>&lt; 0.1</b>
Fatal	26	14	21	29	23	3.6%	3.3%	-0.2
Incapacitating	92	130	105	87	81	2.6%	2.5%	< 0.1
Non-incapacitating	1,485	1,403	1,259	1,140	1,118	2.5%	2.6%	< 0.1
<b>Disregard signal</b>	<b>3,044</b>	<b>1,903</b>	<b>2,905</b>	<b>2,559</b>	<b>2,447</b>	<b>5.2%</b>	<b>5.2%</b>	<b>&lt; 0.1</b>
Fatal	13	15	27	16	16	2.0%	2.3%	0.3
Incapacitating	142	100	155	162	123	4.8%	3.9%	-0.9
Non-incapacitating	2,889	1,788	2,723	2,381	2,308	5.2%	5.3%	< 0.1
<b>Speed</b>	<b>7,717</b>	<b>6,514</b>	<b>6,586</b>	<b>6,984</b>	<b>6,105</b>	<b>14.1%</b>	<b>12.9%</b>	<b>-1.2</b>
Fatal	229	174	187	225	158	27.6%	22.8%	-4.8
Incapacitating	617	607	559	585	514	17.3%	16.2%	-1.1
Non-incapacitating	6,871	5,733	5,840	6,174	5,433	13.6%	12.5%	-1.1
<b>Any/All</b>	<b>11,459</b>	<b>9,231</b>	<b>10,060</b>	<b>10,082</b>	<b>9,123</b>	<b>20.3%</b>	<b>19.3%</b>	<b>-1.0</b>
Fatal	256	199	222	250	186	30.7%	26.9%	-3.8
Incapacitating	793	767	749	777	675	23.0%	21.2%	-1.7
Non-incapacitating	10,410	8,265	9,089	9,055	8,262	19.9%	19.0%	-0.9
<b>All injuries</b>	<b>60,188</b>	<b>56,095</b>	<b>53,363</b>	<b>49,652</b>	<b>47,282</b>	<b>100%</b>	<b>100%</b>	<b>--</b>
Fatal	938	899	898	815	692	100%	100%	--
Incapacitating	3,823	3,807	3,661	3,382	3,179	100%	100%	--
Non-incapacitating	55,427	51,389	48,804	45,455	43,411	100%	100%	--

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

### Notes:

Dangerous driving categories are not mutually exclusive; Any/All may not equal total of individual categories.

Non-incapacitating includes non-incapacitating or possible injuries as reported by the investigating officer.

**Table 3: Vehicles involved in Indiana traffic collisions, by vehicle-specific dangerous driving involvement and vehicle type, 2005-2009**

Dangerous driving category/ Vehicle type	Count of vehicles					As % total vehicle type		
	2005	2006	2007	2008	2009	2008	2009	Change
<b>Aggressive</b>	<b>3,592</b>	<b>3,211</b>	<b>2,972</b>	<b>2,959</b>	<b>2,852</b>	<b>0.9%</b>	<b>0.9%</b>	<b>&lt; 0.1</b>
Passenger car	2,208	1,938	1,804	1,850	1,766	0.9%	0.9%	< 0.1
Light truck	1,175	1,094	984	935	947	0.8%	0.8%	< 0.1
Large truck	171	148	147	143	108	1.0%	0.9%	< 0.1
Motorcycle/Moped	38	31	37	31	31	0.8%	0.9%	0.1
<b>Disregard signal</b>	<b>4,796</b>	<b>2,990</b>	<b>4,954</b>	<b>4,488</b>	<b>4,145</b>	<b>1.3%</b>	<b>1.3%</b>	<b>&lt; 0.1</b>
Passenger car	2,997	1,862	3,081	2,869	2,555	1.4%	1.4%	< 0.1
Light truck	1,669	1,053	1,717	1,513	1,490	1.2%	1.3%	< 0.1
Large truck	119	66	128	87	79	0.6%	0.7%	< 0.1
Motorcycle/Moped	11	9	28	19	21	0.5%	0.6%	0.1
<b>Speed</b>	<b>18,940</b>	<b>19,940</b>	<b>14,591</b>	<b>18,565</b>	<b>22,995</b>	<b>5.4%</b>	<b>7.2%</b>	<b>1.8</b>
Passenger car	11,549	8,709	10,454	13,117	10,707	6.6%	5.7%	-0.9
Light truck	7,100	4,804	6,723	8,388	6,625	6.8%	5.7%	-1.1
Large truck	808	541	631	797	486	5.4%	4.2%	-1.2
Motorcycle/Moped	305	330	363	363	299	9.3%	8.9%	-0.4
<b>Any/All</b>	<b>26,540</b>	<b>19,303</b>	<b>24,811</b>	<b>28,874</b>	<b>24,033</b>	<b>8.4%</b>	<b>7.5%</b>	<b>-0.9</b>
Passenger car	15,738	11,700	14,576	17,065	14,376	8.5%	7.6%	-0.9
Light truck	9,455	6,550	8,983	10,453	8,694	8.4%	7.5%	-1.0
Large truck	1,020	704	850	966	632	6.5%	5.5%	-1.1
Motorcycle/Moped	327	349	402	390	331	10.0%	9.9%	< 0.1
<b>All vehicles</b>	<b>355,122</b>	<b>325,519</b>	<b>343,556</b>	<b>342,857</b>	<b>319,338</b>	<b>100%</b>	<b>100%</b>	<b>--</b>
Passenger car	200,706	186,229	197,106	200,024	187,981	100%	100%	--
Light truck	134,189	121,753	127,761	124,122	116,412	100%	100%	--
Large truck	17,262	14,374	15,033	14,796	11,591	100%	100%	--
Motorcycle/Moped	2,965	3,163	3,656	3,915	3,354	100%	100%	--

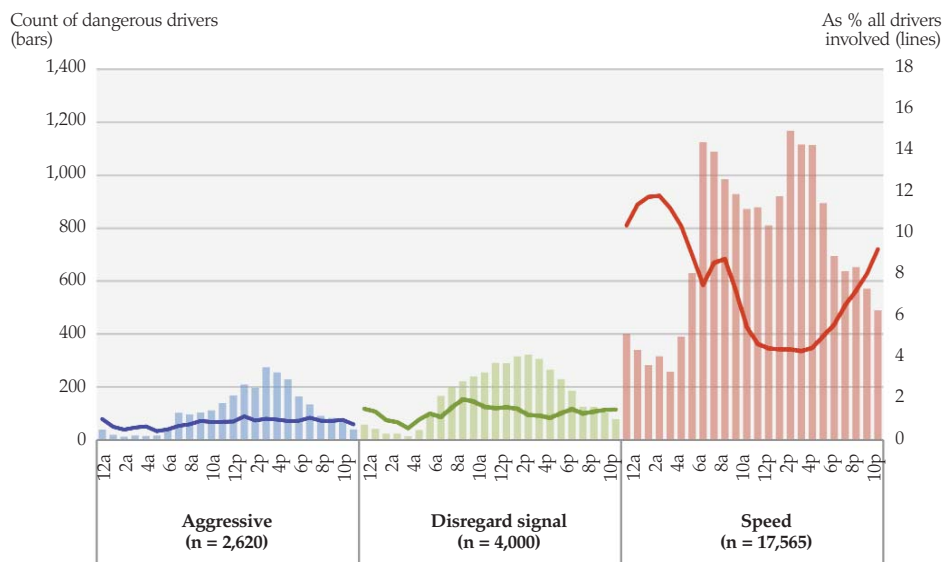
Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

**Notes:**

*Light truck* includes sport utility vehicles, vans, and pickup trucks with gross vehicle weight less than 10,000 pounds.

*Large truck* includes truck (single 2 axle, 6 tires), truck (single 3 or more axles), truck/trailer (not semi), tractor/one semi trailer, tractor/double trailer, tractor/triple trailer, tractor (cab only, no trailer), and pickup trucks with gross vehicle weight greater than or equal to 10,000 pounds.

**Figure 1: Drivers involved in dangerous driving actions in Indiana traffic collisions, by hour of day, 2009**



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

**Note:**

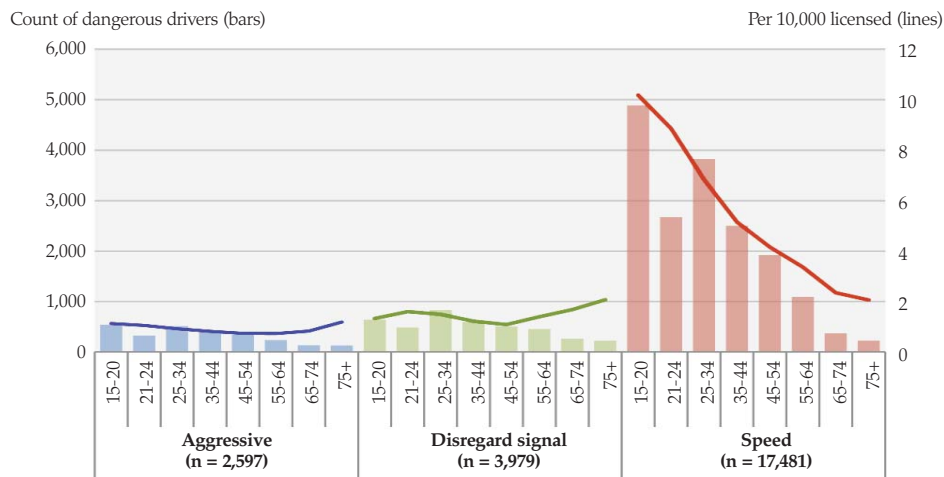
Data exclude cases where collision time was not reported.

Indiana collision data show that all forms of dangerous driving tend to occur most frequently during the afternoon (Figure 1). When normalized by total drivers involved in collisions by hour, however, speeding was most likely involved when the collision occurred in the early morning (approximately 12am – 3am). Similarly, the rate of drivers involved who disregarded a traffic signal was highest during the morning rush hour period. The rate of aggressive driving was generally constant throughout the day.

Young drivers (ages 15 to 20) were more likely to be associated with dangerous driving actions than other age groups (Figure 2). The likelihood that a driver involved in a collision was speeding decreases with age. This finding holds in general when looking at aggressive driving and disregarding traffic signals, though the oldest age groups (65+ years old) had higher rates of these dangerous driving behaviors. This finding might suggest two things: (1) the risk profiles of drivers changes with age, with older drivers being less likely to engage in dangerous driving; and (2) increased driver experience reduces the risk of collision associated with dangerous driving actions.



**Figure 2: Drivers involved in dangerous driving actions in Indiana traffic collisions, by age cohort, 2009**



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

Note:

Data limited to drivers with valid age reported.

**Table 4: Indiana traffic collisions, by dangerous driving involvement, collision severity, and road class, 2009**

Road class	DD involved		No DD involved		All collisions		% Fatal		Relative risk of fatality
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	DD involved	No DD involved	
Interstate	17	2,967	40	10,143	57	13,110	0.57%	0.39%	1.45
US Route	21	2,341	85	15,495	106	17,836	0.89%	0.55%	1.63
State road	25	2,994	127	24,689	152	27,683	0.83%	0.51%	1.62
County road	44	3,665	113	20,151	157	23,816	1.19%	0.56%	2.13
Local/City road	53	10,836	99	74,078	152	84,914	0.49%	0.13%	3.65
All roads	160	23,868	471	165,177	631	189,045	0.67%	0.28%	2.34

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

Notes:

DD = dangerous driving

All roads includes collisions where road class was unknown.

Relative risk of fatality defined as ratio of % Fatal (DD involved) to % Fatal (No DD involved).

**Table 5: Alcohol-related traffic collisions in Indiana, by dangerous driving involvement and collision severity, 2005-2009**

Dangerous driving type/ Collision severity	Count of alcohol-related collisions					As % severity total		
	2005	2006	2007	2008	2009	2008	2009	Change
<b>Aggressive</b>	153	93	68	59	61	0.6%	0.7%	< 0.1
Fatal	7	3	2	6	3	2.8%	1.9%	-0.8
Non-fatal injury	55	42	36	25	21	0.8%	0.7%	< 0.1
Property damage	91	48	30	28	37	0.5%	0.6%	0.2%
<b>Disregard signal</b>	350	170	159	119	130	1.3%	1.5%	0.2
Fatal	6	3	4	3	1	1.4%	0.6%	-0.7
Non-fatal injury	158	79	83	68	71	2.1%	2.4%	0.3
Property damage	186	88	72	48	58	0.8%	1.0%	0.2
<b>Speed</b>	1,653	1,479	1,296	1,374	1,267	14.6%	14.3%	-0.3
Fatal	83	67	59	72	52	33.0%	33.1%	< 0.1
Non-fatal injury	689	635	572	528	504	16.4%	17.0%	0.6
Property damage	881	777	665	774	711	13.0%	12.4%	-0.6
<b>Any/All</b>	2,070	1,699	1,474	1,507	1,415	16.0%	16.0%	< 0.1
Fatal	91	71	63	77	54	35.3%	34.4%	-0.9
Non-fatal injury	863	735	661	599	577	18.6%	19.4%	0.9
Property damage	1,116	893	750	831	784	13.9%	13.7%	-0.2
<b>Total alcohol-related</b>	13,684	11,855	9,943	9,411	8,855	100%	100%	--
Fatal	262	250	233	218	157	100%	100%	--
Non-fatal injury	4,696	4,200	3,557	3,225	2,969	100%	100%	--
Property damage	8,726	7,405	6,153	5,968	5,729	100%	100%	--

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

Note:

Non-fatal injury applies when no fatalities and at least one incapacitating, non-incapacitating, or possible injury occurred.

As shown in Table 4, dangerous driving increases the risk for fatal collisions on all road types, and most especially on local/city roads. In 2009, a traffic collision on a local/city road was 3.7 times more likely to have resulted in a fatality when dangerous driving was involved. On county roads, 1.2 percent of all collisions involving some form of dangerous driving were fatal collisions, the highest proportion of all road classes.

## COUNTY COMPARISONS

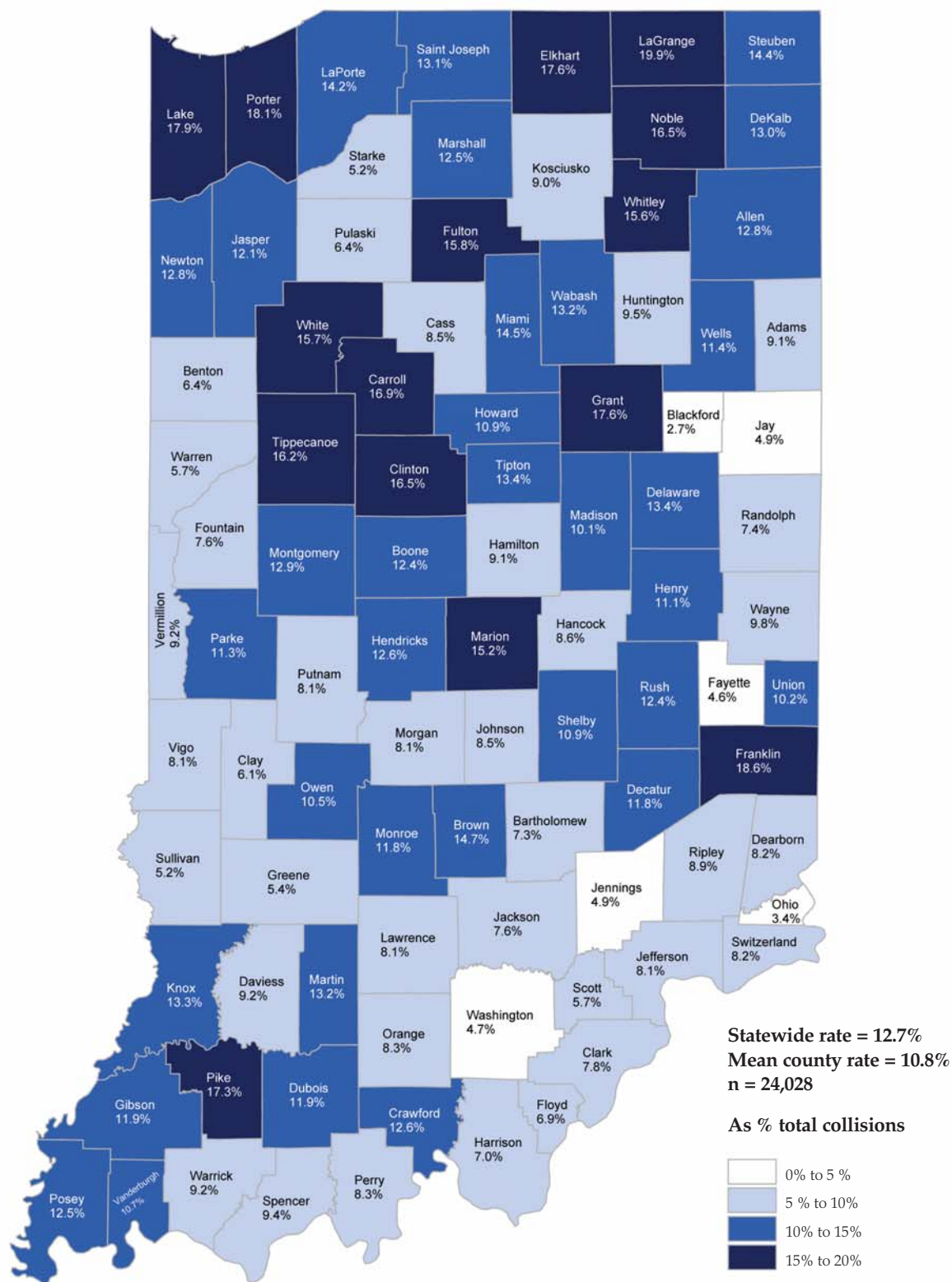
Map 1 shows that, as a proportion of total collisions, dangerous driving was most common in LaGrange County (19.9 percent), Franklin County (18.6 percent), Porter County (18.1 percent), and Lake County (17.9 percent); dangerous driving was least common in Blackford County (2.7 percent), Ohio County (3.4 percent), and Fayette County (4.6 percent).

LaGrange County has had the highest proportion of collisions involving dangerous driving (19.9 percent) from 2005 through 2009. Statewide, 12.7 percent of collisions in Indiana counties involved some form of dangerous driving.

## ALCOHOL INVOLVEMENT

In 2009, one-third of all alcohol-related fatal collisions involved speeding (Table 5). Rate of dangerous driving remained relatively constant from 2008 to 2009, with only speeding exhibiting a slightly increased rate

Map 1: Proportion of Indiana traffic collisions involving dangerous driving, by county, 2009



Source: Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

**Table 6: Injuries in alcohol-related collisions, by dangerous driving involvement and injury status, 2005-2009**

Dangerous driving type/ Injury status	Count of injuries					As % injury status total		
	2005	2006	2007	2008	2009	2008	2009	Change
<b>Aggressive</b>	<b>104</b>	<b>80</b>	<b>78</b>	<b>52</b>	<b>38</b>	<b>1.1%</b>	<b>0.9%</b>	<b>-0.2</b>
Fatal	8	3	2	10	3	4.1%	1.8%	-2.3
Incapacitating	10	12	15	4	2	0.7%	0.4%	-0.3
Non-incapacitating	86	65	61	38	33	1.0%	0.9%	< 0.1
<b>Disregard signal</b>	<b>263</b>	<b>155</b>	<b>149</b>	<b>126</b>	<b>127</b>	<b>2.7%</b>	<b>3.0%</b>	<b>0.4</b>
Fatal	7	3	6	3	1	1.2%	0.6%	-0.6
Incapacitating	16	16	18	15	11	2.6%	2.3%	-0.3
Non-incapacitating	240	136	125	108	115	2.8%	3.2%	0.5
<b>Speed</b>	<b>1,175</b>	<b>1,013</b>	<b>905</b>	<b>865</b>	<b>793</b>	<b>18.3%</b>	<b>18.8%</b>	<b>0.6</b>
Fatal	99	71	61	84	57	34.1%	33.9%	-0.2
Incapacitating	153	164	117	123	132	21.1%	27.9%	6.8
Non-incapacitating	923	778	727	658	604	16.8%	16.9%	< 0.1
<b>Any/All</b>	<b>1,465</b>	<b>1,213</b>	<b>1,073</b>	<b>994</b>	<b>921</b>	<b>21.0%</b>	<b>21.9%</b>	<b>0.9</b>
Fatal	109	75	67	90	59	36.6%	35.1%	-1.5
Incapacitating	171	186	140	136	143	23.4%	30.2%	6.9
Non-incapacitating	1,185	952	866	768	719	19.7%	20.2%	0.5
<b>Total alcohol-related</b>	<b>6,920</b>	<b>6,152</b>	<b>5,241</b>	<b>4,735</b>	<b>4,207</b>	<b>100%</b>	<b>100%</b>	<b>--</b>
Fatal	293	274	254	246	168	100%	100%	--
Incapacitating	704	720	646	582	473	100%	100%	--
Non-incapacitating	5,923	5,158	4,341	3,907	3,566	100%	100%	--

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

Note:

Non-incapacitating includes non-incapacitating or possible injuries as reported by the investigating officer.

**Table 7: Drivers involved in fatal collisions, by alcohol intoxication and dangerous driving involvement, 2005-2009**

<b>Dangerous (any type)?</b>					
<b>Intoxicated?</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>	<b>% Yes</b>	<b>Risk</b>
Yes	271	523	794	34.1%	2.40
No	367	2,211	2,578	14.2%	
<b>Aggressive?</b>					
<b>Intoxicated?</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>	<b>% Yes</b>	<b>Risk</b>
Yes	15	779	794	1.9%	0.95
No	51	2,527	2,578	2.0%	
<b>Disregard signal?</b>					
<b>Intoxicated?</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>	<b>% Yes</b>	<b>Risk</b>
Yes	12	782	794	1.5%	0.93
No	42	2,536	2,578	1.6%	
<b>Speeding?</b>					
<b>Intoxicated?</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>	<b>% Yes</b>	<b>Risk</b>
Yes	256	538	794	32.2%	2.77
No	300	2,278	2,578	11.6%	

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

Notes:

Data include drivers for whom a valid blood alcohol content (BAC) result was reported.

Risk defined as ratio of % Yes (dangerous driving present) when intoxicated, relative to when not intoxicated.

in fatal collisions. As shown in Table 6, among individuals injured in alcohol-related traffic collisions, the likelihood that a fatality occurred was highest when aggressive driving was involved (three of 38 total injuries, or 7.9 percent).

In fatal collisions, dangerous driving activities, especially speeding, are much more likely when the driver was legally intoxicated (blood alcohol content result at or above 0.08 grams per deciliter). From 2005 to 2009, drivers involved in fatal collisions were 2.8 times more likely to have been speeding when they were intoxicated, as compared to non-intoxicated drivers (Table 7). The likelihood of aggressive driving and disregarding a signal in fatal collisions is slightly less when the driver was intoxicated, though the difference is negligible.

## SAFETY EQUIPMENT USE

Indiana collision data suggest an inverse relationship between safety equipment use rates and injury severity, regardless of dangerous driving category (Table 8). In comparisons across dangerous driving types, safety equipment use rates were generally lowest in speed-related collisions and highest in collisions involving a driver disregarding a traffic signal.

## ECONOMIC COSTS

The economic impact of Indiana traffic collisions has generally decreased from 2005 to 2009 for collisions involving aggressive driving and disregarding a traffic signal (Figure 3). Estimated costs of aggressive driving collisions were \$104 million in 2009, and have decreased 6.6 percent annually on average since 2005. Costs associated with collisions involving disregarding signals were slightly higher at \$146 million and also have decreased on average since 2005. Costs associated with speeding collisions have decreased 4.4 percent on average since 2005, but fell from 2008 to 2009 to \$571 million, the first annual decline since 2006.

## ENFORCEMENT AND AWARENESS

To reduce the likelihood of collisions as a result of dangerous driving, Indiana has identified dangerous driving as one of five key target areas to be addressed in its annual 2010 Highway Safety Plan.<sup>4</sup> The Indiana Criminal Justice Institute (ICJI) developed the *Dangerous Driving Enforcement Grant* to reduce the incidence of dangerous driving in thirty counties with the highest incidence of traffic fatalities.<sup>5</sup> In 2009, twenty of the counties received grant funds and the remaining ten used special patrols from the Indiana State Police. In addition, ICJI has seen positive results from media campaigns aimed at reducing speeding, which act as an additional support mechanism to police enforcement of dangerous driving behaviors.

**Table 8: Safety equipment use rates for vehicle occupants involved in Indiana traffic collisions, by vehicle-specific dangerous driving involvement and injury status, 2005-2009**

Dangerous driving category/ Injury status	Safety equipment use rate (%)				
	2005	2006	2007	2008	2009
<b>Aggressive</b>	<b>92.3</b>	<b>93.4</b>	<b>94.4</b>	<b>95.4</b>	<b>96.3</b>
Fatal	47.6	28.6	38.5	11.8	75.0
Incapacitating	57.8	58.0	57.4	66.7	66.7
Non-incapacitating	79.7	86.0	85.5	87.0	87.4
Other injury	97.1	93.9	94.6	92.6	97.8
Not injured	96.0	96.8	97.6	98.2	98.7
<b>Disregard signal</b>	<b>94.7</b>	<b>96.2</b>	<b>96.4</b>	<b>97.8</b>	<b>97.7</b>
Fatal	57.1	50.0	77.8	62.5	40.0
Incapacitating	71.2	79.1	78.3	87.5	84.0
Non-incapacitating	89.2	92.9	92.2	93.4	94.7
Other injury	95.9	98.7	97.3	98.7	98.4
Not injured	97.5	97.6	98.0	99.4	99.0
<b>Speed</b>	<b>89.0</b>	<b>86.7</b>	<b>90.3</b>	<b>93.7</b>	<b>93.9</b>
Fatal	35.5	33.3	26.1	34.1	35.5
Incapacitating	51.0	45.6	47.1	59.8	55.3
Non-incapacitating	75.3	74.0	76.7	82.5	82.6
Other injury	93.0	91.6	92.4	94.0	96.2
Not injured	95.2	93.8	96.2	97.7	98.2
<b>All individuals</b>	<b>90.4</b>	<b>88.9</b>	<b>92.0</b>	<b>94.6</b>	<b>94.8</b>
Fatal	37.6	34.0	29.0	35.3	38.8
Incapacitating	54.1	49.0	51.0	64.1	59.3
Non-incapacitating	78.7	78.0	80.8	84.9	85.5
Other injury	94.0	93.5	94.1	94.9	96.9
Not injured	95.7	94.7	96.7	98.1	98.4

Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

**Notes:**

Data exclude individuals with unknown or invalid safety equipment type.

Data include motorcycle and moped riders (helmet use).

Non-incapacitating includes non-incapacitating and possible injury categories.

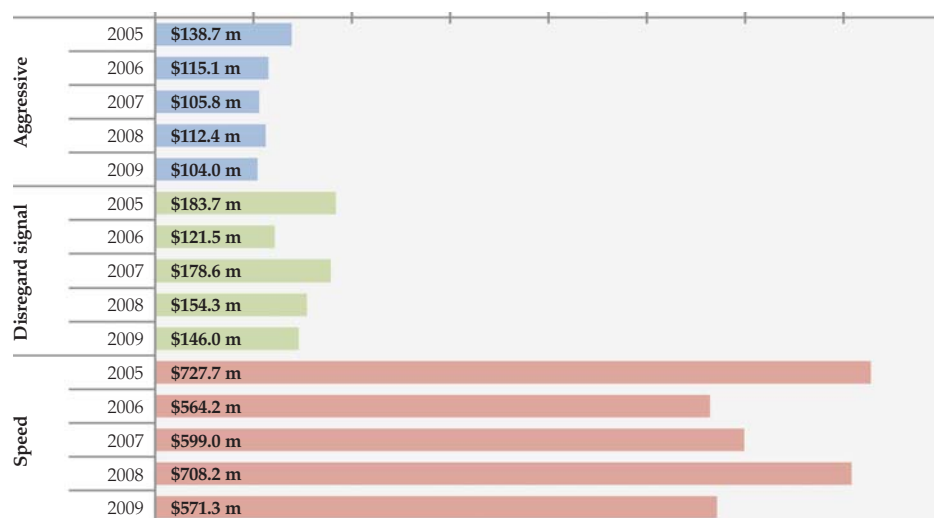
Other injury includes not reported, unknown, refused (treatment), and invalid injury categories.

Not injured are those individuals with no injury category marked.

## SUMMARY

In general, the rate of all types of dangerous driving in collisions has decreased from 2008 to 2009. Drivers of light trucks and passenger cars were most likely to have disregarded a signal, whereas motorcyclists were mostly likely to have been speeding. The likelihood of dangerous driving (speeding, especially) among drivers involved in collisions decreases with age, with drivers under the age of 21 being most likely to drive dangerously in a collision. An inverse relationship also appears to exist between safety equipment use and injury severity. When alcohol was involved, the incidence of fatalities was highest in collisions involving aggressive driving.

**Figure 3: Estimated economic impact of Indiana traffic collisions, by dangerous driving type, 2005-2009**



Source: Indiana State Police Automated Reporting Information Exchange System (ARIES), as of March 1, 2010.

**Notes:**

All costs in 2009 USD (millions).

Costs computed by multiplying aggregate costs by the proportion of collisions involving the dangerous driving category.

See 2008 *Indiana Crash Facts* for details on cost sources and methodology.

## Endnotes:

<sup>1</sup>Insurance Institute for Highway Safety (IIHS), retrieved April 14, 2010 at <http://www.iihs.org/research/topics/speed.html>

<sup>2</sup>IIHS, retrieved April 14, 2010 at <http://www.iihs.org/research/topics/rlr.html>

<sup>3</sup>National Highway Traffic Safety Administration, *Economic Impact of Motor Vehicle Crashes, 2000*, DOT HS 809 446, Washington DC

<sup>4</sup>Indiana Traffic Safety Annual Report, 2010, Indiana Criminal Justice Institute, [http://www.in.gov/cji/files/Indiana\\_FY\\_2010\\_HSP\\_Final.pdf](http://www.in.gov/cji/files/Indiana_FY_2010_HSP_Final.pdf).

<sup>5</sup>Indiana Criminal Justice Institute, 2009 *Indiana Traffic Safety Annual Report*, [http://www.in.gov/cji/files/Indiana\\_2009\\_Annual\\_Report.pdf](http://www.in.gov/cji/files/Indiana_2009_Annual_Report.pdf).



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An electronic copy of this document can be accessed via the CCJR website ([www.ccjr.iupui.edu](http://www.ccjr.iupui.edu)), the ICJI website ([www.in.gov/cji/](http://www.in.gov/cji/)), or you may contact the Center for Criminal Justice Research at 317-261-3000.

## **The Indiana Criminal Justice Institute (ICJI)**

Guided by a Board of Trustees representing all components of Indiana's criminal and juvenile justice systems, the Indiana Criminal Justice Institute serves as the state's planning agency for criminal justice, juvenile justice, traffic safety, and victim services. ICJI develops long-range strategies for the effective administration of Indiana's criminal and juvenile justice systems and administers federal and state funds to carry out these strategies.

## **The Governor's Council on Impaired & Dangerous Driving**

The Governor's Council on Impaired & Dangerous Driving, a division of the Indiana Criminal Justice Institute, serves as the public opinion catalyst and the implementing body for statewide action to reduce death and injury on Indiana roadways. The Council provides grant funding, training, coordination and ongoing support to state and local traffic safety advocates.

## **Indiana University Public Policy Institute**

The Indiana University (IU) Public Policy Institute is a collaborative, multidisciplinary research institute within the Indiana University School of Public and Environmental Affairs (SPEA), Indianapolis. The Institute serves as an umbrella organization for research centers affiliated with SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. The Institute also supports the Office of International Community Development and the Indiana Advisory Commission on Intergovernmental Relations (IACIR).

## **The Center for Criminal Justice Research (CCJR)**

The Center for Criminal Justice Research, one of two applied research centers currently affiliated with the Indiana University Public Policy Institute, works with public safety agencies and social services organizations to provide impartial applied research on criminal justice and public safety issues. CCJR provides analysis, evaluation, and assistance to criminal justice agencies; and community information and education on public safety questions. CCJR research topics include traffic safety, crime prevention, criminal justice systems, drugs and alcohol, policing, violence and victimization, and youth.

## **The National Highway Traffic Safety Administration (NHTSA)**

NHTSA provides leadership to the motor vehicle and highway safety community through the development of innovative approaches to reducing motor vehicle crashes and injuries. The mission of NHTSA is to save lives, prevent injuries and reduce economic costs due to road traffic crashes, through education, research, safety standards and enforcement activity.

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